Application No.: Not Yet Assigned Docket No.: 60680-2030

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An ~~E~~ electrochemical compressor system for compressing gases and/or for producing gases by electrolysis, ~~consisting of~~ comprising an electrochemical compressor stack ~~(1)~~ having a layering of several electrochemical cells, which are separated from one another in each case by bipolar plates ~~(3; 3')~~, wherein the bipolar plates have openings for media supply and media discharge ~~(5a, 5b)~~ for the electrochemical cells and the electrochemical cell stack can placed under mechanical compressive strain in a direction ~~(6)~~ of the layering, ~~characterised~~ characterized in that resilient bead arrangements ~~(7; 7') which are resilient~~ are provided at least in some regions to seal at least one of the openings ~~(4, 5a, 5b) and/or~~ and an electrochemically active region ~~(10)~~ of the electrochemical cells , wherein ~~and that~~ the resilient bead ~~arrangement~~ arrangements are ~~is made from metals~~ metallic.

2 - 42 (Canceled)

43. (New) An electrochemical compressor system according to claim 1, wherein said electrochemical cells further comprise gas diffusion layers facing said bipolar plates, wherein said gas diffusion layers are made from conductive structures.

44. (New) An electrochemical compressor system according to claim 43, further comprising:

a stopper limiting compression of said gas diffusion layers to a predetermined minimum thickness.

45. (New) An electrochemical compressor system according to claim 1, wherein at least a subset of said resilient bead arrangements are coated with at least one of microseal media and an elastomer.

46. (New) An electrochemical compressor system according to claim 1, wherein said resilient bead arrangements contain at least one of a full bead and a half bead.

47. (New) An electrochemical compressor system according to claim 1, wherein said resilient bead arrangements contain at least one full bead, and wherein said at least one full bead further includes at least two flanks, an interior surface, and an exterior surface, wherein said at least one full bead contains perforations on at least one of said flanks, said perforations extending through at least one of said flanks and connecting said exterior surface to said interior surface.

48. (New) An electrochemical compressor system according to claim 1, further comprising:

at least one component separate from said bipolar plates, wherein a portion of said resilient bead arrangements are arranged on said at least one component;

said bipolar plates being substantially constructed of at least one of graphite, plastic, metal or the like; and

wherein said portion of said resilient bead arrangements are integrated with said at least one component by at least one of adhesion, clicking-in, welding-in, soldering-in, and molding-in.

49. (New) An electrochemical compressor system according to claim 1, further comprising:

at least two flanks on the sides of said resilient bead arrangements;

at least one perforation for conducting liquid or gaseous media on at least one of said at least two flanks of said resilient bead arrangements; and

wherein said resilient bead arrangements are provided around said openings of said bipolar plate and/or said electrochemically active region.

50. (New) An electrochemical compressor system according to claim 49, wherein said at least one perforation is circular, oval, and angular.

51. (New) An electrochemical compressor system according to claim 49, further comprising:

a beading interior and a beading outer surface of said resilient bead arrangements; and

a duct connected to said at least one perforation wherein said duct connects to said beading interior and is closed at least towards said beading outer surface.

52. (New) An electrochemical compressor system according to claim 49, wherein said at least one perforation is open towards said electrochemically active region.

53. (New) A fuel cell system comprising:

a fuel cell stack having a layering of a plurality of fuel cells and including an electrochemically active region,

a plurality of bipolar plates separating said fuel cells from one another, said bipolar plates including openings for media for said fuel cells, and wherein said fuel cell stack is placed under mechanical compression in a direction of said layering;

at least one resilient bead arrangement around at least one of said openings, said at least one resilient bead arrangement including at least one flank;

at least one perforation on said at least one flank, said at least one perforation for conducting the media.

54. (New) A fuel cell system according to claim 53, wherein said at least one perforation is circular, oval, and angular.

55. (New) A fuel cell system according to claim 53, further comprising:

a bead interior and a bead outer surface of said at least one resilient bead arrangement; and

a duct connected to said at least one perforation, wherein said duct is closed at least towards said beading outer surface and is connected to said beading interior.

56. (New) A fuel cell system according to claim 53, wherein said at least one perforation is open towards said electrochemically active region.

57. (New) A fuel cell system according to claim 53, wherein said at least one resilient bead arrangement further includes perforations on two flanks.

58. (New) A fuel cell system according to claim 53, wherein said bipolar plate further comprises a carrier wherein said at least one resilient bead arrangement is part of said carrier.

59. (New) A fuel cell system according to claim 53, wherein at least a portion of said at least one resilient bead arrangement is coated with at least one of a microseal media and an elastomer

60. (New) A process for producing a bipolar plate comprising:

providing a metallic plate having a plurality of holes; and

mechanically shaping said metallic plate to produce a bead arrangement such that said plurality of holes are perforations in at least one flank of said bead arrangement.

61. (New) The process for producing a bipolar plate of claim 60, wherein said mechanical shaping further produces a flow field.